

What is claimed is:

1. A hand held dispenser, comprising:
 - a handle;
 - a dispense material manifold supported by said handle;
 - a dispense material mixing module supported at a forward, dispensing end of
 - 5 said manifold, said mixing module having a dispense material passageway that opens out to a dispenser outlet;
 - a driver supported by said handle;
 - a reciprocating member in driving communication with said driver and positioned for reciprocation in said mixing module;
 - 10 a first valve assembly and a first valve housing receiving said first valve assembly, and said first valve housing extending rearwardly off of a first side of a main body portion of said manifold such that said first valve housing is rearward of a rearward end of said mixing module;
 - a first dispense material hose fitting in dispense material communication with
 - 15 said first valve housing;
 - a second valve assembly and a second valve housing receiving said second valve assembly, and said second valve housing extending rearwardly off of a second side of the main body portion of said manifold such that said second valve housing is rearward of a rearward end of said mixing module; and
 - 20 a second dispense material hose fitting in dispense material communication with said second valve housing.

2. The dispenser of claim 1 wherein each of said first and second valve housings has a forward end that lies rearward of a rearward end of said mixing module.

3. The dispenser of claims 1 or 2, wherein said manifold main body portion
5 includes a pair of manifold wing extensions positioned to opposite sides of said mixing module and each having a dispense material feed passageway section feeding to said mixing module, and each wing extension being connected, at an upstream end of said wing extensions with respect to dispense material flow, with a respective one of said first and second valve housings.

4. The dispenser of claim 1 to 3 wherein said wing extensions have forwardly converging curved side edges.

5. The dispenser of claims 3 or 4 wherein said main body portion includes a forward, central mixing module reception recess section and wherein said wing extensions have inwardly sloping interior walls that partially define the mixing module reception recess section.

6. The dispenser of claims 1-5 further comprising a mixing module fastening means that is positioned on an underside of said mixing module and pulls down the mixing module into a reception recess section in fastening the mixing module to the manifold.

7. The dispenser of claim 6 wherein said fastening means includes one or more screw fasteners that extend through the manifold and into threaded engagement with a threaded screw reception portion of said mixing module.

8. The dispenser of claim 7 wherein said fastening means includes a combination male projection portion and female side wall configuration conforming

to said male projection portion in a contact region between said mixing module and manifold.

9. The dispenser of claims 1-8 wherein said first and second valve assemblies include valve shut off handles that are hand operatable by an operator free of tools.

10. The dispenser of claim 9 wherein said shut off valves include a rotating head with rotation limiting means and an elongated handle which extends in a common direction of elongation as that of an adjacent combination of valve housing and hose fitting.

11. The dispenser of claims 3-10 wherein said wing extensions have downwardly sloped upper surfaces and outer side edges that have a converging continuous exterior side edge that extends axially from a border region with an enlarged rear portion of said manifold to a front end of said dispenser.

12. The dispenser of claims 1-11 wherein said reciprocating member is a valve rod that reciprocates in said mixing module and said dispense material includes a first and a second type of foam precursor chemical with the first type supplied via a first hose connected to said first fitting and the second type supplied via a second hose
5 connected to said second fitting and said first and second types being mixed within said mixing module upon retraction of said valve rod and just before exiting the dispenser outlet.

13. The dispenser of claims 1-11 further comprising a drive train system which is positioned so as to convey drive from said driver to said reciprocating member and which includes a transmission housing received within a common central, axially elongated recessed section in said manifold which also receives said
5 mixing module, and wherein said transmission housing has a common exterior configuration as that of a housing of said mixing module and is in contact with a rear

end of said mixing module as to provide an essentially non-stepped interface which helps avoid contaminate build up.

14. The dispenser of claim 13 wherein said driver is an electric motor and said drive train system includes a ball screw transmission having a screw pitch of less than 11° and which is received within said transmission housing.

15. The dispenser of claims 1-11 wherein said reciprocating member is a purging or valving rod and said dispenser further comprising an electric motor with drive shaft as said driver and a drive train system which is positioned so as to convey drive from said motor to said rod, and wherein said drive train includes a ball screw
5 transmission and a gear train, with a central axis of a screw of said ball screw transmission being less than 1.5 inches of a central axis of said drive shaft .

16. The dispenser of claims 14 or 15 wherein said pitch angle of a ball screw of said ball screw transmission is less than 11° degrees.

17. The dispenser of claim 16 wherein the pitch angle is 9° or less.

18. The dispenser of claims 1-17 wherein the dispense material includes mixed foam precursor chemical fluid and wherein each chemical flow passageway has a main passageway section that extends along a common axis of elongation from a hose fitting inlet point to a point representing a divergence off into a chemical
5 passageway section providing a direct feed to said mixing module which common axis is essentially parallel with an axis of elongation of said reciprocating member.

19. The dispenser of claims 1-18 wherein said handle includes a hollowed out upper region and a forward trigger reception opening and wherein said hollowed out region includes a trigger installation passageway that extends to said trigger reception opening.

20. The dispenser of claims 1-19 wherein said reciprocating member is a mixing module valving rod, said driver is an electric motor, and said dispenser further comprises a drive transmission assembly transmitting drive from said driver to said rod which transmission assembly includes a gear train set consisting of only a first
5 and second gear in meshing contact and with said first gear being in direct engagement with a drive shaft of said motor.

21. A hand held dispenser, comprising:

a handle;

a dispense material manifold supported by said handle;

a dispense material mixing module supported at a forward, dispensing end of
5 said manifold, said mixing module having a dispense material passageway that opens out to a dispenser outlet;

a drive assembly supported by said handle;

a reciprocating member in driving communication with said drive assembly and positioned for reciprocation in said mixing module, and

10 said drive assembly comprising a ball screw transmission assembly with a ball screw pitch angle of less than 11 degrees.

22. The dispenser of claim 21 wherein said drive assembly includes an electric motor in driving engagement with said ball screw transmission assembly and a gear train located between a drive shaft of said electric motor and said ball screw transmission assembly.

23. The dispenser of claim 22 wherein said gear train includes two or less gears.

24. The dispenser of claims 21 to 23 wherein said ball screw transmission is received within a housing that is in contact with said mixing module and said

reciprocating member is a valve or purge rod that reciprocates within said mixing module to enable mixing of foam chemical precursor material representing said
5 dispense material.

25. The dispenser of claim 24 wherein one of said housing and said mixing module has a cantilevered cowl section that covers over a reciprocating connecting end portion of said valve rod to protect from foam contamination.

26. The dispenser of claims 21 to 25 wherein said reciprocating member is a rod having an enlarged capture end and said ball screw transmission includes a puller with a capture configuration designed for receipt of said enlarged capture end.

27. The dispenser of claim 21 to 26 wherein said pitch angle is 9 degrees or less.

28. A hand held dispenser, comprising:

a handle;

a dispense material manifold supported by said handle;

a dispense material mixing module supported at a forward, dispensing end of
5 said manifold, said mixing module having a dispense material passageway that opens out to a dispenser outlet;

a driver supported by said handle;

a reciprocating member in driving communication with said driver and positioned for reciprocation in said mixing module; and

10 said dispenser having electrical plug connection means at a rear end of said dispenser which retains an electrical feed line in position and is designed for operator pull out disassembly and push in reconnection.

29. The dispenser of claim 28 wherein said dispenser includes means for connection to respective chemical hoses at rear end of said dispenser and which are placed to opposite sides of said electrical plug connection means.

30. The dispenser of claims 28 and 29 wherein said electrical plug connection means includes a female cup-shaped connector designed to receive a male extension member.

31. The dispenser of claims 28 to 30 wherein said male extension member has a radially inward cavity with electrical leads and said female connector includes an inner projection internalizing electrical leads and said male extension member is dimensioned so as receive said inner projection as said male extension member is
5 received by said cup-shaped female connector.

32. The dispenser of claim 31 wherein said female connector is partially received within an open hollow region at a butt end of said handle.

33. A hand held dispenser, comprising:

a handle;

a dispense material manifold supported by said handle;

a dispense material mixing module supported at a forward, dispensing end of
5 said manifold, said mixing module having a dispense material passageway that opens out to a dispenser outlet;

a driver supported by said handle;

a reciprocating member in driving communication with said driver and positioned for reciprocation in said mixing module; and

10 said manifold having a pair of dispense material passageways leading to said mixing module and first and second fittings for connection with respective sources of dispense material and feeding said dispense material passageways, and said fittings

being swivel fittings having a first bearing ring and a second bearing ring axially spaced from said first bearing ring.

34. The dispenser of claim 33 wherein said fittings have castellated end extensions.

35. A hand held dispenser, comprising:

a handle;

a dispense material manifold supported by said handle;

5 a dispense material mixing module supported at a forward, dispensing end of said manifold, said mixing module having a dispense material passageway that opens out to a dispenser outlet;

a driver supported by said handle;

a reciprocating member in driving communication with said driver and positioned for reciprocation in said mixing module; and

10 said manifold having a pair of dispense material passageways leading to said mixing module and first and second fittings for connection with respective sources of dispense material and feeding said dispense material passageways, and said fittings having castellated free ends.

36. A hand held dispenser, comprising:

a handle;

a dispense material manifold supported by said handle;

5 a dispense material mixing module supported at a forward, dispensing end of said manifold, said mixing module having a dispense material passageway that opens out to a dispenser outlet;

a driver supported by said handle;

a reciprocating member in driving communication with said driver and positioned for reciprocation in said mixing module; and

- 10 an electronic trigger assembly comprising a casing and an electric switch mechanism received within said casing, and a finger compression member also received by said casing, and said switch mechanism having a contact device which is placed in contact with said finger compression device and said casing further comprising a stop wall for contacting a portion of said finger compression device and
- 15 precluding excessive contact with said contact device.

37. The dispenser of claim 36 wherein said handle includes a trigger boot at a forward face which extends over said trigger assembly and a hollow open top with an access aperture which enables access to said trigger assembly when positioned in operating position behind said trigger boot.

38. A hand held dispenser, comprising:

a handle;

a dispense material manifold supported by said handle;

- a dispense material mixing module supported at a forward, dispensing end of
- 5 said manifold, said mixing module having a dispense material passageway that opens out to a dispenser outlet;

a driver supported by said handle;

a reciprocating member in driving communication with said driver and positioned for reciprocation in said mixing module;

- 10 said manifold having a pair of dispense material passageways formed in left and right wing extensions of said manifold and leading to said mixing module; and said dispenser further comprising elongated filter assemblies received in each of said wing extensions and extending along said passageways for more than 1.5 inches.

39. The dispenser of claim 38 wherein said filter assemblies have a filter body diameter of 3/8 inches or less and a length of more than 2.5 inches.

40. The dispenser of claims 38 or 39 further comprising shut off valves in line with said chemical passageways and access ports of 3/8 inch or less downstream of said valve assemblies and upstream of a filter access opening in front end of said dispenser.

41. The hand held dispenser of claim 38 further comprising a temperature sensor and elongated heater cartridge extending essentially parallel with said filter assemblies and received within an access cavity in said manifold and a control unit in communication with each of said cartridge and said temperature sensor to maintain a
5 desired dispense material temperature of above 120 degrees F and with +/- two degrees F of a desired setting.

42. The hand held dispenser of claims 1-41 wherein said mixing module includes a housing with a solvent access port leading to a plurality of solvent volume expansion cavities in an interior wall surface of said housing separated by mixing module interior component retention ridges.

43. A method of assembling a dispenser for use in polyurethane packaging; including:

assembling each of the components set forth, respectively, in claims 1-42.

44. A method of dispensing polyurethane packaging foam involving feeding foam chemical precursor dispense material of two different types to the dispenser as set forth, respectively, in claims 1-40 and releasing mixed dispense material from said dispenser.